Amendments to the Claims

1-24 (CANCELED):

25 (PREVIOUSLY PRESENTED): A three-dimensional data processing program embodied on a computer-readable medium, the program comprising steps of:

acquiring three-dimensional image data and three-dimensional shape data of taken images of a real existing object;

generating a polygon mesh based on the three-dimensional shape data of taken images of the real existing object;

estimating surface reflectance properties of the real existing object based on the three-dimensional image data obtained at the acquiring step and the polygon mesh generated at the generating step thereby generating a bump map; and

reproducing image of the real existing object with a computer graphic based on the polygon mesh generated at the generating step and the bump map generated at the estimating step.

26-34 (CANCELED):

35 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 25, wherein the surface reflectance properties includes data on constants in a reflection model function and data on normal direction constituting the bump map.

36 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 25, wherein the surface reflectance properties is data specifying a specific reflectance from a reflectance table which shows a series of reflectances corresponding to light source

directions and image-taking directions in tangential coordinate systems, and includes data on normal directions constituting the bump map.

37 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 25, further comprising:

acquiring the polygon mesh that shows a simplified shape of the surface shape of the object,

wherein in the estimating step, surface reflectance properties of the object are estimated by using the polygon mesh acquired in the acquiring the polygon mesh step and parameters of image-taking of the object.

38 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 25, wherein in the estimating step, the bump map is generated so that an area of each texel on the bump map becomes substantially equivalent to an area where one pixel of the image data occupies on a surface of the object.

39 (ORIGINAL): The three-dimensional data processing program according to claim 37, wherein the bump map shows amounts of positional changes of respective texels on a texture map to be pasted on the polygon mesh with respect to the polygon mesh.

40 (ORIGINAL): The three-dimensional data processing program according to claim 37, wherein the bump map shows normal directions of respective texels on a texture map to be pasted on the polygon mesh.

41 (ORIGINAL): The three-dimensional data processing program according to claim 37, wherein the bump map shows differences between normal directions of respective texels on a texture map to be pasted on the polygon mesh and normal directions of the polygon mesh.

42 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 37, wherein in the acquiring the polygon mesh step, the polygon mesh is generated based on the image data.

43 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 37, wherein in the acquiring the polygon mesh step, an input of data for the polygon mesh is received.

44 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 37, wherein in the acquiring the polygon mesh step, a polygon mesh having one of a vertex number according to information on a specified vertex and polygon number according to information on a specified polygon number is generated.

45 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 37, wherein in the acquiring the polygon mesh step, bump texture coordinates which specify a pasting position of the bump map are provided for the respective vertices of the polygon mesh.

46 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 25, wherein in the estimating step, the bump map having a texel number according to information on a specified resolution of the bump map resolution is generated.

47 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 25, wherein in the estimating step, the bump map is generated so as to have a normal distribution satisfying a condition that a rotation of vector value of each texel becomes zero.

48 (PREVIOUSLY PRESENTED): The three-dimensional data processing program according to claim 25, further comprising:

an image generating step in which a three-dimensional image of the object is generated by using the bump map generated in the estimating step, and

an image output step in which the generated three-dimensional image is output.

49 (ORIGINAL): A three-dimensional data processing system comprising:

a computer which executes a three-dimensional data processing program according to claim 25.

50 (PREVIOUSLY PRESENTED): A three-dimensional data processing system comprising:

a data acquiring section which acquires three-dimensional image data and three-dimensional shape data of taken images of a real existing object; and

a generating section which generates which generates a polygon mesh based on the three-dimensional shape data of taken images of the real existing object;

an estimating section which estimates surface reflectance properties of the real existing object based on the three-dimensional image data obtained at the acquiring section and the polygon mesh generated at the generating section thereby generating a bump map; and

a reproducing section which reproduces image of the real existing object with a computer graphic based on the polygon mesh generated at the generating section and the bump map generated at the estimating section.

51-59 (CANCELED):

60 (PREVIOUSLY PRESENTED): The three-dimensional data processing system according to claim 50, wherein the surface reflectance properties includes data on constants in a reflection model function and data on normal directions constituting the bump map.

61 (PREVIOUSLY PRESENTED): The three-dimensional data processing system according to claim 50, wherein the surface reflectance properties is data specifying a specific reflectance from a reflectance table which shows a series of reflectances corresponding to light source directions and image-taking directions in tangential coordinate systems, and includes data on normal directions constituting the bump map.

62 (PREVIOUSLY PRESENTED): The three-dimensional data processing system according to claim 50,

wherein the generating section generates the polygon mesh that shows a simplified shape of the surface shape of the object, and

the estimating section estimates the surface reflectance properties of the object by using the polygon mesh generated by the generating section and data showing parameters of image-taking of the object.

63 (PREVIOUSLY PRESENTED): The three-dimensional data processing system according to claim 50, wherein the estimating section generates the bump map so that an area of each texel on the bump map becomes substantially equivalent to an area where one pixel of the image data occupies on a surface of the object.

64 (PREVIOUSLY PRESENTED): The three-dimensional data processing system according to clam 50, wherein the estimating section generates the bump map having a texel number according to information on a specified resolution of the bump map.

65 (PREVIOUSLY PRESENTED): The three-dimensional data processing system according to clam 50, wherein the estimating section generates the bump map so as to have a normal distribution satisfying a condition that a rotation of vector value of each texel becomes zero.

66 (PREVIOUSLY PRESENTED): The three-dimensional data processing system according to clam 50, further comprising:

an image generating section which generates a three-dimensional image of the object by using the bump map generated by the estimating section, and

an image output section which outputs the generated three-dimensional image.